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Practitioner's Docket No.: RWS-32/425

## CHAPTER II

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*Michael Burns*  
 MICHAEL BURNS

TRANSMITTAL LETTER  
 TO THE UNITED STATES ELECTED OFFICE (EO/US)  
 (ENTRY INTO U.S. NATIONAL PHASE UNDER CHAPTER II)

INTERNATIONAL APPLICATION NO.  
 PCT/DE00/03445

INTERNATIONAL FILING DATE  
 27 September 2000

PRIORITY DATE  
 30 September 1999

## TITLE OF INVENTION

APPARATUS FOR TRANSFERRING MEMBRANES TO A CONTINUOUSLY OPERABLE  
 SEALING CARROUSEL FOR THE HEAT SEALING OF CAN-LIKE PACKAGING MATERIALS

APPLICANT  
 BEYRICH, Karlheinz, et al.

Box PCT  
 Assistant Commissioner for Patents  
 Washington D.C. 20231  
 ATTENTION: EO/US

1. Applicant herewith submits to the United States Elected Office (EO/US) the following items under 35 U.S.C. 371:
  - a. [X] This express request to immediately begin national examination procedures (35 U.S.C. 371(f)).
  - b. [X] The U.S. National Fee (35 U.S.C. 371(c)(1)) and other fees (37 C.F.R. § 1.492) as indicated below:

## 2. Fees

CLAIMS FEE	(1) FOR	(2) NUMBER FILED	(3) NUMBER EXTRA	(4) RATE	(5) CALCULATIONS
[ ]*	TOTAL CLAIMS	9 - 20 =			
	INDEPENDENT CLAIMS	1 - 3 =		x \$ =	
	MULTIPLE DEPENDENT CLAIM(S) (if applicable) + \$270.00				
BASIC FEE**	<p>[ ] U.S. PTO WAS INTERNATIONAL PRELIMINARY EXAMINATION AUTHORITY Where an International preliminary examination fee as set forth in § 1.482 has been paid on the international application to the U S PTO.</p> <p>[ ] and the international preliminary examination report states that the criteria of novelty, inventive step (non-obviousness) and industrial activity, as defined in PCT Article 33(2) to (4) have been satisfied for all the claims presented in the application entering the national stage (37 CFR 1.492(a)(4)) ..... \$98.00 and the above requirements are not met (37 CFR 1.492(a)(1)) ..... \$720.00</p> <p>[X] U.S. PTO WAS NOT INTERNATIONAL PRELIMINARY EXAMINATION AUTHORITY Where no international preliminary examination fee as set forth in § 1.482 has been paid to the U.S. PTO, and payment of an international search fee as set forth in § 1.445(a)(2) to the U S PTO:</p> <p>[ ] has been paid (37 CFR 1.492(a)(2)) ..... \$790.00</p> <p>[ ] has not been paid (37 CFR 1.492(a)(3)) ..... \$1,070.00</p> <p>[X] where a search report on the international application has been prepared by the European Patent Office or the Japanese Patent Office (37 CFR 1.492(a)(5)) ..... \$860.00</p>				
	Total of above Calculations				= \$890.00
SMALL ENTITY	Reduction by 1/2 for filing by small entity, if applicable. Affidavit must be filed. (note 37 CFR 1.9, 1.27, 1.28)				
	Subtotal				\$890.00
	Total National Fee				\$890.00
	Fee for recording the enclosed assignment document \$40.00 (37 CFR 1.21(h)) (See Item 13 below). See attached "ASSIGNMENT COVER SHEET".				
TOTAL	Total Fees enclosed				\$890.00

(C)(3)

\*See attached Preliminary Amendment Reducing the Number of Claims.

- i. ☒ Payment in the amount of \$890.00 to cover the above fees is enclosed.
  - ii. ☐ Please charge Account No. \_\_\_\_\_ in the amount of \$ \_\_\_\_\_.  
A duplicate copy of this sheet is enclosed.
3. ☒ A copy of the International application as filed (35 U.S.C. 371(c)(2)):
  - a. ☒ is transmitted herewith.
  - b. ☐ is not required, as the application was filed with the United States Receiving Office.
  - c. ☐ has been transmitted
    - i. ☐ by the International Bureau.  
Date of mailing of the application (from form PCT/IB/308): \_\_\_\_\_.
    - ii. ☐ by applicant on \_\_\_\_\_  
Date
4. ☒ A translation of the International application into the English language (35 U.S.C. 371(c)(2)):
  - a. ☒ is transmitted herewith.
  - b. ☐ is not required as the application was filed in English.
  - c. ☐ was previously transmitted by applicant on \_\_\_\_\_  
Date
  - d. ☐ will follow.
5. ☐ Amendments to the claims of the International application under PCT Article 19 (35 U.S.C. 371(c)(3)):
  - a. ☐ are transmitted herewith.
  - b. ☐ have been transmitted
    - i. ☐ by the International Bureau.  
Date of mailing of the amendment (from form PCT/IB/308): \_\_\_\_\_
    - ii. ☐ by applicant on \_\_\_\_\_  
Date
  - c. ☐ have not been transmitted as
    - i. ☐ applicant chose not to make amendments under PCT Article 19.  
Date of mailing of Search Report (from form PCT/ISA/210): \_\_\_\_\_
    - ii. ☐ the time limit for the submission of amendments has not yet expired. The amendments or a statement that amendments have not been made will be transmitted before the expiration of the time limit under PCT Rule 46.1.
6. ☐ A translation of the amendments to the claims under PCT Article 19 (38 U.S.C. 371(c)(3)):
  - a. ☐ is transmitted herewith.
  - b. ☐ is not required as the amendments were made in the English language.
  - c. ☐ has not been transmitted for reasons indicated at point 5(c) above.

7. ☒ A copy of the international examination report (PCT/IPEA/409)  
☒ is transmitted herewith.  
☐ is not required as the application was filed with the United States Receiving Office.
8. ☐ Annex(es) to the international preliminary examination report  
a. ☐ is/are transmitted herewith.  
b. ☐ is/are not required as the application was filed with the United States Receiving Office.
9. ☐ A translation of the annexes to the international preliminary examination report  
a. ☐ is transmitted herewith.  
b. ☐ is not required as the annexes are in the English language.
10. ☒ An oath or declaration of the inventor (35 U.S.C. 371(c)(4)) complying with 35 U.S.C. 115  
a. ☐ was previously submitted by applicant on \_\_\_\_\_.  
Date  
b. ☒ is submitted herewith, and such oath or declaration  
i. ☒ is attached to the application.  
ii. ☐ identifies the application and any amendments under PCT Article 19 that were transmitted as stated in points 3(b) or 3(c) and 5(b); and states that they were reviewed by the inventor as required by 37 C.F.R. 1.70.  
iii. ☐ will follow.

Other document(s) or information included:

11. ☒ An International Search Report (PCT/ISA/210) or Declaration under PCT Article 17(2)(a):  
a. ☒ is transmitted herewith.  
b. ☐ has been transmitted by the International Bureau.  
Date of mailing (from form PCT/IB/308): \_\_\_\_\_  
c. ☐ is not required, as the application was searched by the United States International Searching Authority.  
d. ☐ will be transmitted promptly upon request.  
e. ☐ has been submitted by applicant on \_\_\_\_\_.  
Date
12. ☐ An Information Disclosure Statement under 37 C.F.R. 1.97 and 1.98:  
a. ☐ is transmitted herewith.  
Also transmitted herewith is/are:  
☐ Form PTO-1449 (PTO/SB/08A and 08B).  
☐ Copies of citations listed.  
b. ☐ will be transmitted within THREE MONTHS of the date of submission of requirements under 35 U.S.C. 371(c).  
c. ☐ was previously submitted by applicant on \_\_\_\_\_.  
Date

13. ☐ An assignment document is transmitted herewith for recording.

A separate ☐ "COVER SHEET FOR ASSIGNMENT (DOCUMENT) ACCOMPANYING  
NEW PATENT APPLICATION" or ☐ FORM PTO  
1595 is also attached.

14. ☒ Additional documents:
- a. ☐ Copy of request (PCT/RO/101)
  - b. ☒ International Publication No. WO 01/23259
    - i. ☐ Specification, claims and drawing
    - ii. ☒ Front page only
  - c. ☒ Preliminary amendment (37 C.F.R. § 1.121)
  - d. ☐ Other

15. ☒ The above checked items are being transmitted
- a. ☒ before 30 months from any claimed priority date.
  - b. ☐ after 30 months.

  
SIGNATURE OF PRACTITIONER

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Docket No.: RWS-32/425

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants : KARLHEINZ BEYRICH ET AL.  
Applic. No.: PCT/DE00/03445  
Filed : Concurrently herewith  
Title : APPARATUS FOR TRANSFERRING MEMBRANES TO A  
CONTINUOUSLY OPERABLE SEALING CARROUSEL FOR THE  
HEAT SEALING OF CAN-LIKE PACKAGING MATERIALS

P R E L I M I N A R Y A M E N D M E N T

Hon. Commissioner of Patents,  
Washington, D. C. 20231

S i r :

Preliminary to examination kindly amend the above-identified  
application as follows:

In the Translated Specification:

Page 1, line 1, delete the paragraph reading "Description";

above the first paragraph and below the title, insert

-- Background of the Invention:

Field of the Invention: --.

Page 3, above the last paragraph, insert

-- Summary of the Invention: --.

• Page 6, between lines 28 and 30, insert

-- Brief Description of the Drawings: --.

Page 7, between lines 14 and 16, insert

-- Description of the Preferred Embodiments: --.

Page 12, top, change "Patent claims" to -- We claim: --.

In the Claims:

Claim 4 (amended). The apparatus as claimed in claim 1, characterized in that the membrane-strip feed (12) to the cutting tool (11) is provided laterally above the membrane star (10).

Claim 5 (amended) The apparatus as claimed in claim 1, characterized in that the membrane-strip feed (12) to the cutting tool (11) is provided at a feed angle of approximately 30 degrees.

Claim 6 (amended). The apparatus as claimed in claim 1, characterized in that, during each resting phase (14) of the membrane star (10), in each case two membranes (13) can be transferred from the membrane strip (12), by way of a double cutting tool (11), to the membrane star (10).

Claim 7 (amended). The apparatus as claimed in claim 1, characterized in that ejectors for the cut-out membranes (13) are integrated in each case in the cutting punches of the double cutting tool (11).

Remarks:

The preliminary amendment is being filed in an effort to present an application in proper U.S. format and to present claims in proper U.S. claim idiom for examination.

An early action on the merits of the claims is requested.

Respectfully submitted,



For Applicants

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/tk

April 1, 2002

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## VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Specification:

Page 1, line 1, [Description]

Page 12, top, [Patent claims] We claim:.

In the Claims:

Claim 4 (amended). The apparatus as claimed in [claims 1 to 3] claim 1, characterized in that the membrane-strip feed (12) to the cutting tool (11) is provided laterally above the membrane star (10).

Claim 5 (amended) The apparatus as claimed in [claims 1 to 4] claim 1, characterized in that the membrane-strip feed (12) to the cutting tool (11) is provided at a feed angle of approximately 30 degrees.

Claim 6 (amended). The apparatus as claimed in [claims 1 to 5] claim 1, characterized in that, during each resting phase (14) of the membrane star (10), in each case two membranes (13) can be transferred from the membrane strip (12), by way of a double cutting tool (11), to the membrane star (10).

Claim 7 (amended). The apparatus as claimed in [claims 1 to 6] claim 1, characterized in that ejectors for the cut-out

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membranes (13) are integrated in each case in the cutting punches of the double cutting tool (11).

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Description

Apparatus for transferring membranes to a continuously operable sealing carousel for the heat sealing of can-like packaging materials

The invention relates to an apparatus for transferring membranes to a continuously operable sealing carousel for the heat sealing of can-like packaging materials, a rotatable transfer station being arranged upstream of the sealing carousel.

These can-like containers may contain dried products or pulverulent material.

DE 41 19 656 A1 discloses an arrangement for feeding insert parts into a production station with a continuously moveable workpiece carrier. Can parts are conveyed, at a distance apart from one another, in the continuously moveable workpiece carrier, the intention being for said can parts to be fitted, for example, with a can base or insert part. In this case, starting from a storage station for can bases, the prefabricated bases are transferred to a feed arrangement comprising a stationary part and a pivotably moveable part which, by means of a so-called tool carrier, which can be pivoted in pendulum fashion, and via a likewise pivotably mounted carry-along means, receives prefabricated can bases and positions them continuously on the cans.

Although this is based on the insert parts/can bases/tops consisting of relatively stable materials, it is nevertheless also possible for unstable insert parts, such as flexible sheet blanks, which have to be retained precisely during transfer and during insertion, to be introduced into a production station and inserted into workpieces there.

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One disadvantage of this method of fitting insert parts into a continuously operated production station is that it is based on a storage station for insert parts which, depending on the capacity, needs to be filled with insert parts.

A further disadvantage is the necessary temporary coupling between the apparatus for transferring insert parts and the tool carrier. Both said transfer apparatus and the tool carrier each need to be restored into the starting position in order to ensure that they are refitted with insert parts.

While it is thus the case in the production station, which may also be a round workpiece table, that the workpiece table is moved continuously, the tool carrier, which has deposited the insert parts on the workpiece carrier, always has to execute anew movement in the opposite direction into its starting position.

The operation of receiving insert parts from the storage station into the transfer apparatus requires a starting position, as does the operation of transferring the insert parts into the tool station, temporary coupling between the tool station and the workpiece station being necessary for transfer of the insert parts from the tool station into the workpiece station. Thereafter, with the transfer of insert parts into the workpiece station, uncoupling of the tool station, with a return movement, is necessary.

These discontinuous coupling, uncoupling and forward and return movements of the transfer apparatus and tool station creates pendulum movements in opposite directions, which do not allow a production station to operate at a overly high speed.

DE 295 17 440 U1 also discloses an apparatus for the heat sealing of can-like packaging materials. Receiving

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pockets for receiving and carrying along can bodies are arranged in a sealing carrousel, a magazine for a number of sealable cardboard bases being provided laterally on the carrousel, and the cardboard bases then being moved, via a suction-extraction arrangement acting from beneath, from said magazine to a rotatable transfer station, which then transfers the separated cardboard bases continuously to the forming ring of the sealing carrousel.

Although pendulum or return movements do not occur here, it is likewise a disadvantage of this apparatus that the sealable cardboard bases have to be received from a magazine which has a limited cardboard-base stacking height.

Accordingly, after a relatively short period of time, the magazine has to be constantly refilled with cardboard bases if the continuous sealing process is not to be interrupted.

Moreover, use of the abovementioned apparatus for advancing extremely thin closure parts, such as membranes, cannot readily be realized since the separation of such thin workpieces obviously requires high outlay in terms of equipment and monitoring in order for it not to be possible, for example, for any doubles to be advanced.

Taking this prior art as the departure point, the object of the invention is to provide an apparatus which is intended for transferring membranes to a continuously operable sealing carrousel for the heat sealing of can-like packaging materials, having a rotatable transfer station arranged upstream, and which allows a higher throughput speed of the sealing carrousel and in the case of which it is ensured to a high degree that there are no problems as far as separating the thin membranes/insert parts is

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concerned, either when the membranes are received by the transfer station or when the membranes are transferred to the sealing carrousel.

- 5 This object is achieved according to the invention by means of an apparatus according to the wording of claim 1.

It is proposed that the transfer station is designed as a cyclically driveable membrane star, and a cutting  
10 tool for membrane-strip processing is provided above the membrane star, it being possible for transfer of cut-out membranes from the membrane strip to the membrane star to be effected during a resting phase of the membrane star and for advancement of membranes  
15 positioned on the membrane star to the sealing carrousel to be effected during the movement phase of the membrane star.

As a preferred embodiment, the membrane star is  
20 intended to have a number of vacuum stations, the individual vacuum stations being designed such that, where the membranes are transferred to/received by the respective sealing head, the stations can be returned via an entry curve.

25 Membrane-strip processing is thus used as a basis, the membranes cut out of the strip being transferred directly to the rotatable transfer station, namely the cyclically driveable membrane star. As a result, a  
30 storage station for membranes/insert parts is generally omitted. This means that problems resulting from such a storage station in the case of very thin parts, such as membranes - for example combining the cut-out parts to form the stack and separating them reliably again from  
35 the storage station - do not arise.

For the transfer of the membranes to the membrane star, the membrane star is located in its resting phase, with

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the result that the membranes are positioned precisely on the membrane star. On the other hand, membrane transfer from the membrane star to the sealing carrousel takes place in the movement phase of the

5 membrane star. The sealing carrousel can thus be operated continuously throughout, and it is possible to realize a higher throughput speed or throughput rate for membranes which are to be applied to containers.

10 In order for it to be possible for the membranes placed on the membrane star to be transferred to the individual sealing station, the membrane star overlaps the receiving region of each sealing-carrousel sealing station moved past and, for the purpose of achieving a common path section between the two stations as

15 membranes are transferred/received, is returned via an entry curve on the fixed part of the membrane star.

The membrane-strip feed to the cutting tool is advantageously intended to take place laterally above

20 the membrane star, at a feed angle of approximately 30 degrees.

This makes it possible for the membrane-strip unwinding unit to be positioned laterally on the membrane star.

25 This also makes it possible, during every second resting phase, for full utilization of the membrane strip to take place, via a double cutting tool, by two membranes being cut out simultaneously and being positioned at the corresponding stations of the

30 membrane star.

For this purpose, ejectors for the cut-out membranes are integrated in each case in the cutting punches of the double cutting tool. These ejectors push the cut

35 parts/membranes to the individual transfer stations on the membrane star, the vacuum stations. This makes it optimally possible for the membranes to be moved reliably to the vacuum stations even in the case of a

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relatively high number of cutting-tool strokes and small resting-phase periods of the membrane star.

It is also the case that a vacuum station in the form of a collector/ejector is integrated within each sealing head on the sealing carrousel.

The membranes running into the receiving region in each case on the membrane star are received, during the synchronized running of the membrane star and sealing carrousel, by the sealing-head tool part, which functions as a collector/ejector, by virtue of the vacuum applied at the membrane star being switched off briefly, and, as they approach the collector/ejector, at which a corresponding vacuum is applied, are received and moved to the sealing ring. Here, the membrane placed in the sealing ring, once the cardboard can has been received at the sealing carrousel from the transfer star, is sealed on as operation continues in the sealing carrousel.

Finally, it is possible for the membrane star to be designed such that it can be driven by a step-by-step motion linkage.

The invention is explained in yet more detail hereinbelow with reference to an exemplary embodiment. In the drawing:

Figure 1 shows a basic illustration, in plan view, of a cyclically driveable membrane star, membrane-strip processing in the double cutting tool in the resting phase, during cutting of membranes with transfer to the membrane star, sealing carrousel and transfer and receiving star for can bodies,

Figure 2 shows a basic illustration as in figure 1,



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but during transfer of a membrane, placed on the membrane star, to the sealing head of the sealing carrousel,

5 Figure 3 shows a plan view of the membrane strip in the cut state,

Figure 4 shows a plan view of an illustration, partly in section, of the membrane star on the right and the sealing carrousel on the left, and  
10

Figure 5 shows a sectional illustration B-B according to figure 4 with a sealing head receiving a membrane from the membrane star.  
15

The apparatus for transferring membranes 13 (figure 3) to a continuously operable sealing carrousel 15 for the heat sealing of can-like packaging materials is represented in basic illustrations in plan view according to figures 1 and 2. Figure 1 shows the apparatus, the membrane star 10, in one of the resting phases, and figure 2 shows it in the movement phase. A double cutting tool 11 is, in principle, arranged above the membrane star 10, which circulates cyclically according to the invention.  
25

This double cutting tool 11, which is indicated as a transversely depicted rectangle, is assigned a membrane strip 12, which can be fed cyclically to the double cutting tool 11 via a membrane-strip unwinding unit (not illustrated). The membrane star 10 has vacuum stations 17 (see figure 4), from 1 to 8, it being the case that, in the basic illustrations according to figures 1 and 2, it is only the course taken by the centers of the individual vacuum stations 1 to 8 which is illustrated in each case on the membrane star 10. Furthermore, the sealing carrousel 15 is depicted in the centre. In this case, the individual vacuum  
30  
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stations 20 of the sealing heads 18 (see figure 5) are designated by the numbers 1' to 8', it also being the case here that it is the course taken by the centers of the vacuum stations 20, in this case moveable over a circular line, which is illustrated. Represented to the right of the sealing carrousel 15 is a transfer star 22 for cardboard cans with transfer stations 1" to 5", and represented to the left of the sealing carrousel 15 is a receiving star 23 with the receiving stations 1" to 5".

Figure 3 shows a plan view of the membrane strip in the cut state. It can be seen from figure 3 that in each case two membranes 13 are cut out of the membrane strip 12, from the positions designated x, by the double cutting tool 11. As a result of being divided up in this way, the membrane strip 12 is utilized to the optimum extent.

According to figure 1, in the resting phase, the membrane star 10 has its vacuum stations 7 and 8 located precisely beneath the membranes 13 designated x.

Figure 4 shows a plan view of a detail of an illustration, partly in section, of the membrane star 10 and sealing carrousel 15 in the membrane-transfer region 24 according to figure 2, during membrane transfer 13 from the vacuum station 17/3 of the membrane star 10 to the vacuum station 20/3' of the sealing head 18 (figure 5). A detail of part of the sealing carrousel 15 with the vacuum stations 20/2', 20/3' and 20/4' is shown on the left-hand side.

The vacuum station 20/2' is located upstream of membrane transfer, the membrane transfer takes place in the central vacuum station 20/3', and the vacuum station 20/4' has already received the membrane 13 (not visible).

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Four vacuum stations 17/2, 17/3, 17/4 and 17/5 in the membrane-transfer section are shown in detail form on the membrane star 10, the membrane transfer taking place in the vacuum station 17/3. Whereas, accordingly, 5 the vacuum station 17/2 is still occupied by a membrane 13 which is to be fed, the vacuum station 17/4 has already transferred to the vacuum station of the sealing head 20/4' the membrane 13 previously positioned on it. The directions of rotation of the 10 sealing carrousel 15 and membrane star 10 are indicated by arrow symbols - as is also the case in figures 1 and 2.

Figure 5 shows, in a sectional illustration B-B 15 according to figure 4, the situation when the sealing head 18 of the sealing carrousel 15 receives a membrane from the membrane star 10.

Shown on the left, as in figure 4, is the sealing carrousel 15 and, on the right, the membrane star 10, 20 each in detail form. Also depicted in figure 5 are the vacuum station 17/3 of the membrane star 10 and the vacuum station 20/3' of the sealing head 18 with the sealing ring 21.

A membrane 13 is located between the two vacuum 25 stations of the membrane star 10 and sealing head 18. The vacuum station 20/3' is illustrated in a state in which it has been lowered downward from the sealing ring 21, into a collecting position in relation to the vacuum station 17/3 of the membrane star 10, and it 30 receives a membrane 13 from the membrane star 10, i.e. from the vacuum station 17/3 there. Specifically for the purpose of receiving a membrane, it is necessary to have a synchronized-running section between the membrane star 10 and the sealing carrousel 15, the 35 respective vacuum station 17 of the membrane star 10, at this location of transfer to the sealing carrousel 15, being returned by an entry curve 19 to the membrane star 10. The different speeds between the membrane star

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10 and sealing carrousel 15 are equalized by the step-by-step motion linkage (not illustrated) at the moment the membrane is transferred/received.

5 The vacuum applied at the vacuum station 17/3 of the membrane star 10 is switched off whenever the vacuum station of the sealing head, in this case 20/3', has assumed its position directly diametrically opposite. Since the membrane star 10 is moved cyclically, each vacuum station 17 of the membrane star 10 which passes  
10 into the transfer region of the sealing carrousel 15 will, accordingly, move, via an accelerating section 16, into synchronized running with the sealing carrousel 15, as the membrane is received, and will move out of the membrane-transfer region via a  
15 decelerating section 16 (figure 1). According to figure 2, the transfer/synchronized running region is designated as the transfer region by 24.

20 While the membrane star 10 is thus basically operated cyclically, by a step-by-step motion linkage (not illustrated) executing the abovedescribed movements in the transfer regions to the sealing carrousel 15, in every second standstill position in each case two  
25 membranes 13 are cut out of the membrane strip 12, and positioned on the membrane star 10, via the double cutting tool 11.

This provides an apparatus which serves a continuously  
30 operated sealing carrousel 15 for the heat sealing of can-like packaging materials, having a rotatable transfer station, which allows a throughput speed of sealable packaging materials in the sealing carrousel which is considerably higher than in the prior art, and  
35 which basically involves no problems relating to separating thin membranes/insert parts, since a storage station in the form of membranes stored one above the other is dispensed with.

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5 The operations of the membrane star receiving cut-out membranes from the membrane strip and of membranes being transferred from the membrane star to the sealing tool of the sealing carrousel can both be carried out with a high degree of reliability.

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## Patent Claims

1. An apparatus for transferring membranes to a continuously operable sealing carrousel for the heat sealing of can-like packaging materials, a rotatable transfer station being arranged upstream of the sealing carrousel, characterized in that the transfer station is designed as a cyclically driveable membrane star (10), and a cutting tool (11) for membrane-strip processing (12) is provided above the membrane star (10), it being possible for transfer of cut-out membranes (13) from the membrane strip to the membrane star (10) to be effected during the resting phases (14) of the membrane star (10) and for advancement of membranes (13) positioned on the membrane star (10) to the sealing carrousel (15) to be effected during the movement phases of the membrane star (10).
2. The apparatus as claimed in claim 1, characterized in that a number of vacuum stations (17) are formed on the membrane star (10).
3. The apparatus as claimed in claim 2, characterized in that the individual vacuum stations (17) on the membrane star (10) are designed such that, where the membranes are transferred to/received by the respective sealing head (18), the stations can be returned via an entry curve (19).
4. The apparatus as claimed in claims 1 to 3, characterized in that the membrane-strip feed (12) to the cutting tool (11) is provided laterally above the membrane star (10).
5. The apparatus as claimed in claims 1 to 4, characterized in that the membrane-strip feed (12) to the cutting tool (11) is provided at a feed angle of approximately 30 degrees.

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6. The apparatus as claimed in claims 1 to 5, characterized in that, during each resting phase (14) of the membrane star (10), in each case two membranes (13) can be transferred from the membrane strip (12), by way of a double cutting tool (11), to the membrane star (10).
7. The apparatus as claimed in claims 1 to 6, characterized in that ejectors for the cut-out membranes (13) are integrated in each case in the cutting punches of the double cutting tool (11).
8. The apparatus as claimed in claim 1, characterized in that a vacuum station (20) in the form of a collector/ejector is integrated within each sealing head (18) on the sealing carrousel (15).
9. The apparatus as claimed in claim 1, characterized in that the membrane star (10) is designed such that it can be driven by a step-by-step motion linkage.

(12) NACH DEM VERTRAG ÜBER DIE INTERNATIONALE ZUSAMMENARBEIT AUF DEM GEBIET DES  
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- (84) Bestimmungsstaaten (regional): europäisches Patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).

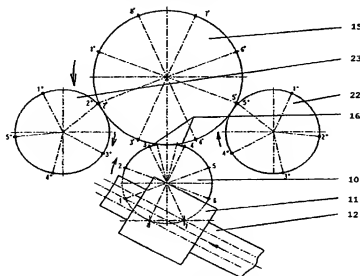
Veröffentlicht:

— Mit internationalem Recherchenbericht.

[Fortsetzung auf der nächsten Seite]

(54) Title: DEVICE FOR TRANSFERRING MEMBRANES INTO A CONTINUOUSLY OPERABLE SEALING CARROUSEL FOR HEAT SEALING CAN-SHAPED PACKAGING MATERIALS

(54) Bezeichnung: VORRICHTUNG ZUM ÜBERFÜHREN VON MEMBRANEN IN EIN KONTINUIERLICH BETREIBBARES SIEGELKARUSSELL ZUM HEISSSIEGELN VON DOSENFÖRMIGEN VERPACKUNGEN



(57) Abstract: The invention relates to a device for transferring membranes into a continuously operable sealing carousel for heat sealing can-shaped packaging materials, whereby a rotating transfer station is connected upstream from said sealing carousel. The inventive device is characterized in that the transfer station is designed as a membrane star (10) that can driven in a timed manner, and a cutting tool (11) used for a membrane strip processing (12) is provided above the membrane star (12). A transfer of cut-out membranes (13) from the membrane strip to the membrane star (10) can be effected during the resting phases (14) of the membrane star (10), and an advancing of membranes (13) positioned on the membrane star (10) to the sealing carousel (15) can be effected during the movement phases of the membrane star (10).

[Fortsetzung auf der nächsten Seite]

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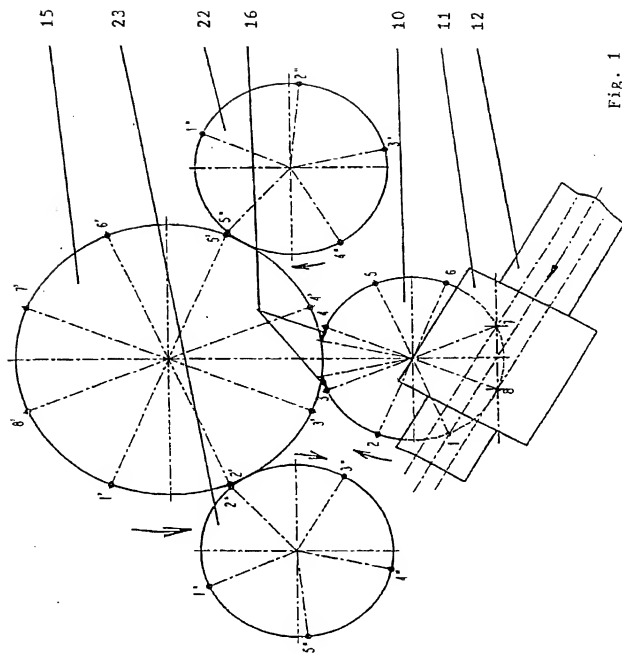


Fig. 1

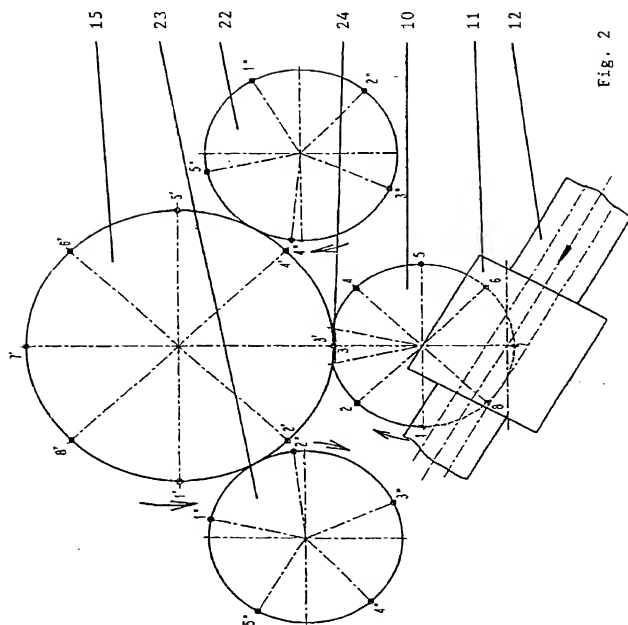


Fig. 2

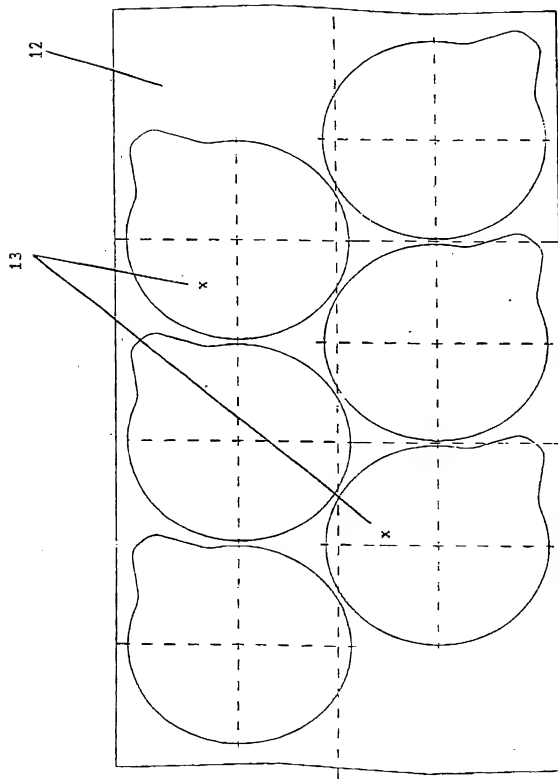


Fig. 3

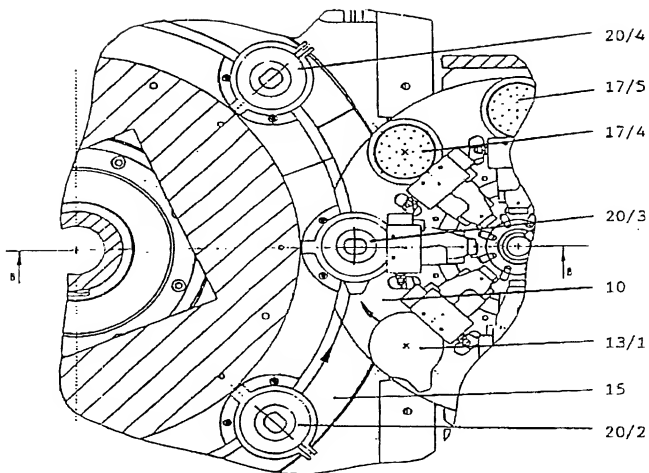


Fig. 4

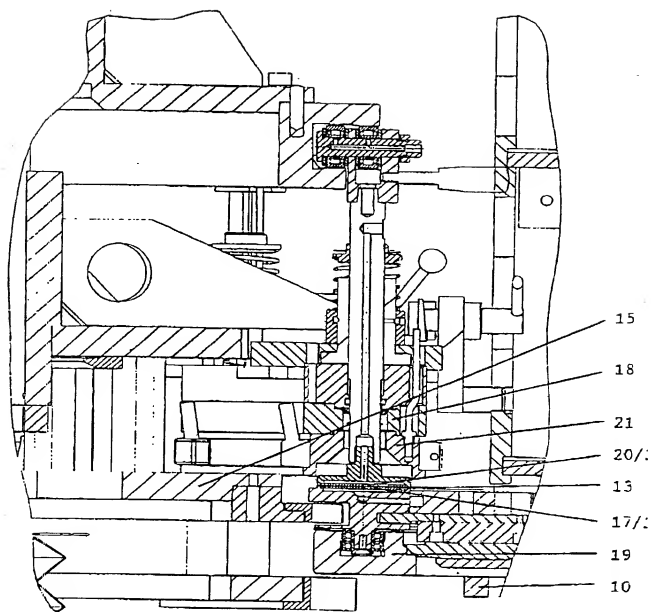


Fig. 5

Practitioner's Docket No.: RWS-32/425

PATENT

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**COMBINED DECLARATION AND POWER OF ATTORNEY**

(ORIGINAL, DESIGN, NATIONAL STAGE OF PCT, SUPPLEMENTAL, DIVISIONAL,  
CONTINUATION, OR C-I-P)

---

As a below named inventor, I hereby declare that:

**TYPE OF DECLARATION**

This declaration is for a national stage of PCT application.

**INVENTORSHIP IDENTIFICATION**

My residence, post office address and citizenship are as stated below, next to my name. I believe that I am the original, first and sole inventor (*if only one name is listed below*) or an original, first and joint inventor (*if plural names are listed below*) of the subject matter that is claimed, and for which a patent is sought on the invention entitled:

**TITLE OF INVENTION**

APPARATUS FOR TRANSFERRING MEMBRANES TO A CONTINUOUSLY OPERABLE  
SEALING CARROUSEL FOR THE HEAT SEALING OF CAN-LIKE PACKAGING MATERIALS

**SPECIFICATION IDENTIFICATION**

The specification is attached hereto.

**ACKNOWLEDGMENT OF REVIEW OF PAPERS AND DUTY OF CANDOR**

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information, which is material to patentability as defined in 37, Code of Federal Regulations, § 1.56.

**PRIORITY CLAIM (35 U.S.C. § 119(a)-(d))**

I hereby claim foreign priority benefits under Title 35, United States Code, § 119(a)-(d) of any foreign application(s) for patent or inventor's certificate or of any PCT international application(s) designating at least one country other than the United States of America listed below and have also identified below any foreign application(s) for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date before that of the application(s) of which priority is claimed.

Such applications have been filed as follows.

**PRIOR PCT APPLICATION(S) FILED WITHIN 12 MONTHS  
(6 MONTHS FOR DESIGN) PRIOR TO THIS APPLICATION  
AND ANY PRIORITY CLAIMS UNDER 35 U.S.C. § 119(a)-(d)**

INDICATE IF PCT	APPLICATION NUMBER	DATE OF FILING DAY, MONTH, YEAR	PRIORITY CLAIMED UNDER 35 U.S.C. 119
PCT	PCT/DE00/03445	27 September 2000	
Germany	299 17 251.1	30 September 1999	Yes

**POWER OF ATTORNEY**

I hereby appoint the following practitioner(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith.

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**DECLARATION**

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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